CLAIMS:

1. An electrical heating unit for use in a heating device for heating an object to a required temperature and enabling to maintain this temperature of the object, the heating unit having one of the following configurations:

(i) comprises first and second elements each made of a material with a specific resistivity in a range of about 0.01-0.1Ohm·mm^2/m thereby enabling substantial flexibility of the heating unit, the first and second elements being accommodated adjacent to each other in spaced-apart substantially parallel planes, being electrically insulated from each other, and having different resistance and different surface areas as compared to each other, the first element having the relatively high resistance and relatively low surface area and serving as a heater, and the second element, which is to be located closer to the object when in operation of the heating unit, serving as a distributor of heat created by the first element when the first element is connected to a power source, the heating unit being arranged so as to provide for compensating a magnetic field created by the heating unit when connected to the power source;

(ii) comprises a heater element made of an electrically conductive material and formed with spaced-apart holes of predetermined shape and distribution within the heater element plane so as to provide a desired value of a working resistance of the heater element for generating a required heat power, the heating unit when connected to the power source thereby providing substantially homogeneous temperature field in the vicinity of the heating unit.

2. The heating unit according to Claim 1, when in operation provides for as low as desired temperature gradient between the temperature of the surface through which heat is dissipated and said required temperature of the heated object.

3. The heating unit according to Claim 2, when in operation provides for the temperature gradient between the temperature of the surface through which heat is dissipated and said required temperature of the heated object as low as 1°.

4. The heating unit according to any one of Claims 1(i) to 3, wherein the surface area of the second element is at least two times higher than the surface area of the first element.

5. The heating unit according to any one of Claims 1(i) to 4, wherein the external surface area of the second element is substantially equal to the surface of the object to be heated.

6. The heating unit according to any one of Claims 1(i) to 5, wherein the first and second elements are made of the same material.

7. The heating unit according to any one of Claims 1(i) to 5, wherein the first and second elements are made of different materials.

8. The heating unit according to any one of preceding Claims, wherein the heater element is made of one of the following materials: aluminum, copper, and iron.

9. The heating unit according to any one of Claims 1(i) to 8, wherein the second element is made of aluminum or copper.

10. The heating unit according to any one of preceding Claims, wherein the arrangement of the heating unit providing for compensating the magnetic field is such that the heater element is a strip folded in a ripple-like fashion and having a length of each of two adjacent substantially parallel segments of the strip significantly larger than a length of a connecting segment between them.

11. The heating unit according to Claim 1(i) and 10, wherein the second element which is to be disconnected from the power source during the operation of the heating unit has a sheet-like geometry.

12. The heating unit according to Claim 1(i) and 10, wherein the second element is a strip folded in a ripple-like fashion and having a length of each of two adjacent substantially parallel segments of the strip significantly larger than a length of a connecting segment between them.

13. The heating unit according to any one of Claims 1(i) to 9, wherein the first and second elements have sheet-like geometries of substantially equal perimeters, and the first element is formed with a plurality of holes.

14. The heating unit according to Claim 1(i), wherein the first and second elements, when both connected to the power source, are characterized by electric currents of the same magnitude and opposite directions, thereby resulting in the compensation of magnetic fields created by the electric currents passage through the elements.

15. The heating unit according to any one of preceding Claims, wherein the length, l, and width, b, of the heater element satisfy the following relationships:

$$l \geq k \cdot U \cdot \sqrt{\frac{\delta}{\rho}} \qquad b \geq k \cdot I \cdot \sqrt{\frac{\rho}{\delta}}$$

wherein U is the voltage that falls on the heater element; I is the current flowing through the first element; ρ is the specific resistivity of the heater element material; δ is the thickness of the heater element; k is a coefficient depending on the object to be heated and said required temperature, so as to satisfy the condition that electric power supplied to the heating unit is substantially equal with a heat power required for heating the object to the required temperature.

16. The heating unit according to any one of Claims 1(i) to 15, wherein at least those surfaces of the first and second elements by which they face each other are coated with thin insulating layers.

17. The heating unit according to Claim 1(ii), wherein said heater element is in the form of a strip folded in a serpentine- or ripple-like fashion such that a length of each of the two adjacent substantially parallel segments of the strip is significantly larger than the length of the connecting segment between them, the heating unit when in operation thereby providing for compensating of a magnetic field created due to the electric current passage through the heater element.

18. The heating unit according to Claim 17, comprising a heat distributor element located adjacent to said heater element.

19. The heating unit according to Claim 18, wherein said heat distributor is made of a material with relatively low value of working resistance as compared to that of the heater element.

20. A heating device for heating an object to enable maintaining a required temperature of the object with as small as desired temperature gradient between the surface through which heat is dissipated and said required temperature of the object, the heating device comprising the heating unit of any one of preceding Claims, and a power source for supplying a required voltage to the heating unit.

21. The device according to Claim 20, wherein said required voltage is lower than that of a power network.

22. The device according to Claim 21, wherein said power source comprises an accumulator unit.

23. The device according to Claim 22, wherein said accumulator unit comprises at least two batteries, selectively operable by a switching unit, so as to connect a selective one of the batteries to the heating unit.

24. The device according to Claim 23, wherein a charging unit is provided and selectively operable to charge that one of the batteries which is disconnected from the heating unit.

25. The device according to Claim 24, wherein said selected one of the batteries, while being connected to the heating unit, is mechanically and electrically disconnected from a power network.

26. The device according to any one of Claims 20 to 25, wherein said heating unit is configured to be accommodated inside a bed-sheet for covering or wrapping the body to be heated.

27. A heating system for heating an object up to a required temperature and maintaining this temperature, the system comprising the heating device of any one of Claims 20 to 26, and a control unit.

28. The system according to Claim 27, wherein said control unit comprises a temperature sensor for measuring the temperature of the object, a processing and managing unit, and an indication unit, and is operable to provide continuous feedback loop control of the temperature of the object and of the operation of the temperature sensor, and to provide indication thereof